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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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08/958,568 10/28/97 OHTANI H 07977/192001

020985 NM92/0626  
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EXAMINER

HU.S

ART UNIT

PAPER NUMBER

2811

DATE MAILED:  
06/26/01

Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.

08/958,568

Applicant(s)

Ohtani et al.

Examiner

Shouxiang Hu

Art Unit

2811



-- Th MAILING DATE of this communication appears on the cov r sh et with the c rrespondenc address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Apr 16, 2001
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 7-12, 29-55, 61, 62, 73-76, and 79-87 is/are pending in the applica
- 4a) Of the above, claim(s) 7-12 and 29-55 is/are withdrawn from considera
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 61, 62, 73-76, and 79-87 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirem

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☒ The proposed drawing correction filed on Mar 12, 2001 is: a) ☒ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some\* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 20) ☐ Other: \_\_\_\_\_

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## **DETAILED ACTION**

### ***Claim cancellation***

1. Claims 60, 77 and 78 are canceled according to Applicant's amendment filed on 3/12/2001.

Currently claims 61, 62, 73-76 and 79-87 are active.

### ***Drawings***

2. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 3/12/01 have been approved.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 61, 62, 73-76 and 79-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art ("AAPA") shown in Figs. 2(A)-2(B) in view of Tang et al. ("Tang"; 4,890,141).

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Applicant's claimed invention differs from AAPA shown in Figs. 2(A)-2(B) in that: the AAPA does not comprise a conductive layer connecting the source/drain region and the nearby gate interconnection without a contact hole. However, it is noted that it is well known in the art that such type of connection can be formed through a local interconnection, as evidenced in Tang. Tang teaches to form a semiconductor device (Fig. 4a) comprising a local interconnection layer (202, comprising Ti) connecting a source/drain region (204 or 206, comprising a Ti-silicide) and a nearby gate interconnection (212) through no contact hole.

It is further noted that the top layer interconnection (35) in AAPA is connected to the gate interconnection through a contact hole outside the source/drain region and the top interconnection presumably comprises aluminum as aluminum is one of the few most widely used materials in interconnection layers. And, one of ordinary skilled in the art would readily recognize that the connection between the top interconnection and the local interconnection can be formed through a contact hole outside the source/drain region, as evidenced in the prior art such as Bonis (5,187,123; See Fig. 16).

Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to incorporate the local interconnection of Tang into the semiconductor device of AAPA with the connection between the top interconnection and the local interconnection being formed through a contact hole outside the source/drain region, so that an improved electrical connection between the source/drain region and the nearby gate interconnection would be achieved with a simplified process.

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Regarding claims 74 and 75, it is noted that both silicon oxide and silicon nitride are among the most commonly used interlayer dielectric materials.

***Response to Arguments***

5. No arguments which point out disagreements with the examiner's contentions are found in Applicant's amendment filed on 3/12/2001. Applicant is encouraged to discuss the references applied against the claims, explaining how the claims avoid the references or distinguish from them.

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reference A is cited as being related to a semiconductor device with a local interconnection.

7. Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 or 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to ***Shouxiang Hu*** whose telephone number is (703) 306-5729. The examiner can normally be reached on Tuesday through Friday from 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ***Tom Thomas***, can be reached on (703) 308-2772. The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) 308-7724.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is (703) 308-0956.

Shouxiang Hu

June 22, 2001

  
TOM THOMAS  
SUPERVISORY PATENT EXAMINER